

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for ~~modulating the levels of a metabolic or biosynthetic product in a plant, including introducing a product into a plant, said method comprising introducing a genetic sequence encoding the product or a precursor to said product, or encoding an enzyme for the biosynthesis or metabolism of the product or a precursor of said product or a genetic sequence which alters the level of expression of a gene encoding a product or an enzyme capable of acting on the product, into a cell or group of cells of said plant, wherein the plant is a member of the family *Saccharum* genus, and wherein said metabolic or biosynthetic product comprises a polyhydroxyalanoate, a mixture of polyhydroxyalanoates or a precursor thereof~~ producing polyhydroxyalkanoates (PHAs) in a species of *Saccharum*, said method comprising expressing nucleotide sequences comprising SEQ ID NO:1, SEQ ID NO:4 and SEQ ID NO:7 or nucleotide sequences capable of hybridizing to the complement of SEQ ID NO:1, SEQ ID NO:4 or SEQ ID NO:7 under stringent conditions.

2. (Currently Amended) The method of Claim 1 ~~herein~~ wherein the member species of the *Saccharum* genus is sugarcane.

3. (Previously Presented) The method of Claim 1 wherein the polyhydroxyalkanoate is polyhydroxybutyrate.

4. (Currently Amended) The method of Claim 1 ~~wherein the genetic sequence comprises one or more genetic sequences selected from the list comprising:-~~

- ~~(i) a nucleotide sequence encoding a phaA or homolog thereof;~~
- ~~(ii) a nucleotide sequence encoding phaB or homolog thereof;~~

- ~~(iii) a nucleotide sequence encoding phaC or homolog thereof;~~
- ~~(iv) a nucleotide sequence encoding phaC1 or homolog thereof;~~
- ~~(v) a nucleotide sequence encoding phaG or homolog thereof;~~
- ~~(vi) a nucleotide sequence encoding phaJ or homolog thereof~~
- ~~(vii) SEQ ID NO:1 or SEQ ID NO:3 or SEQ ID NO:10 or SEQ ID NO:12 or a nucleotide sequence having at least 60% identity thereto after optimal alignment, or capable of hybridizing to SEQ ID NO:1 or SEQ ID NO:3 or SEQ ID NO:10 or SEQ ID NO:12 or a complementary form thereof under low stringency conditions;~~
- ~~(viii) SEQ ID NO:4 or SEQ ID NO:6 or SEQ ID NO:13 or SEQ ID NO:15 or a nucleotide sequence having at least 60% identity thereto after optimal alignment, or capable of hybridizing to SEQ ID NO:4 or SEQ ID NO:6 or SEQ ID NO:13 or SEQ ID NO:15 or a complementary form thereof under low stringency conditions;~~
- ~~(ix) SEQ ID NO:7 or SEQ ID NO:9 or SEQ ID NO:16 or SEQ ID NO:18 or a nucleotide sequence having at least 60% identity thereto after optimal alignment, or capable of hybridizing to SEQ ID NO:7 or SEQ ID NO:9 or SEQ ID NO:16 or SEQ ID NO:18 or a complementary form thereof under low stringency conditions;~~
- ~~(x) SEQ ID NO:19 or SEQ ID NO:21 or SEQ ID NO:22 or SEQ ID NO:24 or SEQ ID NO:25 or SEQ ID NO:27 or a nucleotide sequence having at least 60% identity thereto after optimal alignment, or capable of hybridizing to SEQ ID NO:19 or SEQ ID NO:21 or SEQ ID NO:22 or SEQ ID NO:24 or SEQ ID NO:25 or SEQ ID NO:27 or a complementary form thereof under low stringency conditions;~~
- ~~(xi) SEQ ID NO:28 or SEQ ID NO:30 or a nucleotide sequence having at least 60% identity thereto after optimal alignment, or capable of hybridizing to SEQ ID NO:28 or SEQ ID NO:30 or a complementary form thereof under low stringency conditions;~~
- ~~(xii) SEQ ID NO:31 or SEQ ID NO:33 or a nucleotide sequence having at least 60% identity thereto after optimal alignment, or capable of hybridizing to SEQ ID NO:31 or SEQ ID NO:33 or a complementary form thereof under low stringency conditions~~wherein the nucleotide sequences further comprises SEQ ID NO:19 or a nucleotide sequence capable of hybridizing to the complement of SEQ ID NO:19 under stringent conditions.

5. (Currently Amended) A genetically modified *Saccharum* sp. cell comprising a genetic sequence ~~encoding a metabolic or biosynthetic product or a precursor to said product, or encoding an enzyme for the biosynthesis or metabolism of the product or a precursor of said product or a genetic sequence which alters the level of expression of a gene encoding a product or an enzyme capable of acting on the product wherein said metabolic or biosynthetic product comprises a polyhydroxyalkanoate, a mixture of polyhydroxyalkanoates or a precursor thereof comprising SEQ ID NO:1, SEQ ID NO:4 and SEQ ID NO: 7 or nucleotide sequences capable of hybridizing to the complement of SEQ ID NO:1, SEQ ID NO:4 or SEQ ID NO:7 under stringent conditions.~~

6. (Original) The *Saccharum* sp. cell of Claim 5, wherein said *Saccharum* sp. is sugarcane.

7. (Previously Presented) The *Saccharum* sp. cell of Claim 5, wherein the polyhydroxyalkanoate is polyhydroxybutyrate.

8. (Canceled)

9. (Currently Amended) A genetically modified *Saccharum* sp. plant comprising one or more cells of claim 5.

10. (Original) Seeds or other reproductive material or propagation material from the plant of Claim 9.

11. (Previously Presented) A polyhydroxyalkanoate polymer or mixture of polyalkanoate polymers produced according to the method of Claim 1.

12. (Currently Amended) A plant based bioreactor system used for the production of a ~~metabolic or biosynthetic product~~ polyhydroxyalkanoate, said bioreactor

comprising one or more genetically modified cells of Claim 5 ~~or one or more *Saccharum* sp. plants of comprising said cells.~~

13. (New) A plant based bioreactor system used for the production of a polyhydroxyalkanoate, said bioreactor comprising one or more genetically modified cells of Claim 9.

14. (New) The method of Claim 1 wherein the nucleotide sequences further comprises SEQ ID NO:28 or a nucleotide sequence capable of hybridizing to the complement of SEQ ID NO:28 under stringent conditions.

15. (New) The method of Claim 1 wherein the nucleotide sequences further comprises SEQ ID NO:31 or a nucleotide sequence capable of hybridizing to the complement of SEQ ID NO:31 under stringent conditions.

16. (New) The genetically modified *Saccharum* sp cell which further comprises SEQ ID NO:19 or a nucleotide sequence capable of hybridizing to the complement of SEQ ID NO:19 under stringent conditions.

17. (New) The genetically modified *Saccharum* sp cells which further comprises SEQ ID NO:28 or a nucleotide sequence capable of hybridizing to the complement of SEQ ID NO:28 under stringent conditions.

18. (New) The genetically modified *Saccharum* sp cell which further comprises SEQ ID NO:31 or a nucleotide sequence capable of hybridizing to the complement of SEQ ID NO:31 under stringent conditions.